

6.3 Manage User

In the "User" menu, you can manage a maximum of 40 users. Each user may be assigned a user language and various user-specific settings.

- You can change the names of users. You cannot change the name of the default user.
- You can delete users. You cannot delete the active user or the default user.
- If the desired user is not displayed, scroll down on the touch-screen display.

6.3.1 Adding a user

When adding a new user, the default settings are firstly adopted, user-specific settings (labelled on the touchscreen with a green dot) [▶ 65] may be carried out by the user at any time.

Action

1. Tap on the [User] button in the status bar.
2. Tap on the button .
3. Enter: name, language, interpupillary distance, diopters of the left/right eye, marking rings of the adjustable eyecup for the new user.
4. Tap on the [OK] button .
5. In order to select the new user as an active user, tap on the desired user name in the "Select user" menu.
 - ⇒ The current user is highlighted in blue.
 - ⇒ The new user is now highlighted in blue and is shown as an active user in the status list.
6. Close the menu by tapping on the button .

6.3.2 Configuration of users

In the status bar of the "Configure User" menu , you can perform the following user profile settings for the current user:

- Editing the user name
- Language selection
- Add comment
- Enter the interpupillary distance
- Enter left eye diopters
- Enter right eye diopters
- Marking ring on the adjustable eyecup

If the entered values (in the case of interpupillary distance, diopters of left and right eye) are greater than adjustable values, a note on the permissible values appears at the top of the touchscreen.

Action

1. Tap on the [Configure User] button  in the status bar.
2. Tap on the respective field: [user name, language, comment ...].
3. Enter the information for the user profile.
4. Tap on the [Save] button.
⇒ The user profile settings are now saved for the current user.

6.3.3 Export user settings to a USB storage medium.

Every user (incl. default users) can export his own complete user settings to a USB storage device in order to transfer them to another KINEVO 900. Only the IT admin user can at once select and export all user data records to a USB storage device.

Action

1. Select the user to be exported as the active user.
2. Tap on the [Configure User] button  in the status bar.
3. Connect the USB storage device to the USB port.
4. Tap on the [Export] button  to export the complete user settings to a USB storage device.

6.3.4 Importing the user settings from a USB storage device

(e.g. from another KINEVO 900)

A logged in user (incl. Default_User) may import his user settings from a user data record from a USB storage medium. Only the IT Admin can import complete user data records, with these then being created as new users.

When a new user is created, it is always checked whether this name already exists. If so, an addition is applied to the newly added user name (e.g. "Ellen Edwards_2").

Action

1. Tap on the [Configure User] button  in the status bar.
2. Connect the USB storage device to the USB port.
3. Tap on the [Import] button  to import the complete user settings from the USB storage device.
 - ⇒ The list of user records stored on the USB storage device is displayed.
4. Select the user record to be imported.
 - ⇒ The selected user record is imported.
The selected user is displayed as the active user in the status bar.

6.3.5 Change of user

It is not possible to change users during a video recording. Therefore, always terminate any running video recordings before changing users.

Action

1. Tap on the [User] button in the status bar.
 - ⇒ The "Select User" menu is displayed. The current user is highlighted in blue.
2. Tap on the new user name.
 - ⇒ The new user is displayed. The "Change of user" menu is hidden.

6.3.6 copy a user

Action

1. Tap on the [User] button in the status bar.
 - ⇒ The "Select User" menu is displayed.
All stored users are displayed. The user list is sorted alphabetically.
2. If a user is not displayed, scroll down the user list.
3. Tap on the [Configure User] button .
4. Mark the box in front of the user name.
 - ⇒ The desired user is highlighted in blue .
5. Tap on the [Copy] button  at the bottom left to copy the user record.
 - ⇒ The copy (with the suffix "_1" appended to the name) is displayed below the copied user.

6.3.7 Delete User

Action

1. Tap on the [User] button in the status bar.
 - ⇒ The "Select User" menu is displayed.
2. Tap on the [Configure User] button .

- ⇒ All stored users are displayed. The user list is sorted alphabetically.
- 3. If the new user is not displayed, scroll down the user list.
- 4. Mark the box in front of the user name to be deleted.
To delete multiple users simultaneously, mark the boxes in front of the names of all users to be deleted.
 - ⇒ Your selection is confirmed by a  symbol.
- 5. Tap on the [Delete] button  to delete the user name(s) you have selected.
 - ⇒ The "Delete User" menu is displayed.
- 6. To delete the user(s): Tap on the [Yes] button.
 - ⇒ The user(s) has/have been deleted.
- 7. Tap on the live image on the touchscreen to close the menu.

6.4 Patient administration

You can manage patient data in the "Patient" menu. In the patient menu, you can save, export or delete images, videos or data.

6.4.1 Adding a patient

Action

1. Tap on the [Patient] button in the status bar.
 - ⇒ The "Patient" menu is displayed.
2. Tap on the [Add Patient] button .
 - ⇒ The "Create New Patient" menu is displayed.
3. Tap on the respective field: [First name, Last name, Gender, Date of birth, Patient ID, Comments ...].
 - ⇒ The virtual keyboard is displayed.
4. Enter the desired patient data.
If the date is entered in the wrong format, a message will appear at the top of the touchscreen: "Wrong format. Use MM/DD/YYYY."
5. Tap on the [Done] button.
 - ⇒ The patient data were saved for the current patient.
6. To close the "Patient" menu: Tap on the [Patient] button or on the  button in the status bar.

6.4.2 Changing patients

It is not possible to change patients during a video recording. Always terminate any running video recordings before changing patients.

Action

1. Tap on the [Patient] button in the status bar.
⇒ The "Patient" menu is displayed.
2. Tap on the new patient name.
⇒ The patient folder is displayed and created as the current patient.
3. To close the "Patient" menu: Tap on the [Patient] button or on the  button in the status bar.

6.4.3 Edit patient data

In the status bar of the "Edit patient data" menu , you can perform the following settings for the current patient:

- Change first name
- Change last name
- Add comment
- Gender
- Date of birth
- Patient ID

Action

1. Tap on the [Edit patient data]  button in the status bar.
⇒ The "Edit patient data" menu is displayed.
2. Tap on the respective field: [First name, Last name, Gender, Date of birth, Patient ID, Comments ...].
⇒ The virtual keyboard is displayed.
3. Change the required patient information.
4. Tap on the [Done] button.
⇒ The patient data were saved for the current patient.

6.4.4 Searching for a patient

Action

1. Tap on the [Patient] button in the status bar.
⇒ The "Patient" menu is displayed.
2. Tap on the [Search] button .
3. Enter a search term: Patient name, starting letters, etc.
⇒ The patient or patient group being searched for is displayed.

6.4.5 Sorting patients

Action

1. Tap on the [Patient] button in the status bar.
⇒ The "Patient" menu is displayed.
2. Tap on the [Filter] button .
⇒ The sorting criteria [Date], [Name], [Size] are displayed.
3. Tap on the desired [Button].
⇒ The patient list is displayed sorted.
4. Tap on the [Sort] button  to display the sorted patient list in ascending or descending order (alphabetical order).
5. To close the "Patient" menu: Tap on the [Patient] button or on the  button in the status bar.

6.4.6 Export Patient Data

Note:

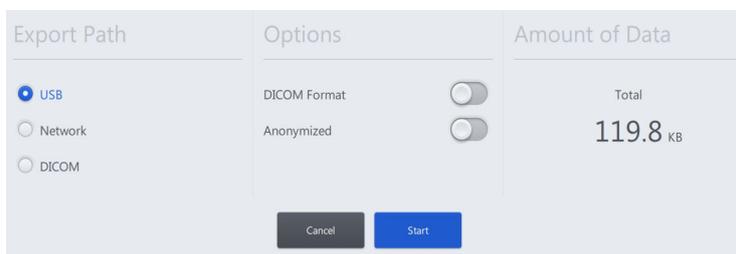
Patient data that are exported from a system with software version 1.6 cannot be imported into systems that have a lower software version.

Prerequisite

- When exporting to a USB storage medium, the target storage medium has enough free space; the USB symbol in the status bar must not be colored orange.

Action

1. Tap on the [Patient] button in the status bar.
⇒ The "Patient" menu is displayed.
2. Tap on the name of the patient whose data is to be saved. Mark the box in front of the patient name.
⇒ Your selection is confirmed by a  symbol.
3. Tap on the [Export Selected] button .
⇒ The "Export Patient Data" menu is displayed.



4. Select the desired export path: "USB", "Network" or "DICOM" button.

Note on export to a USB storage medium:

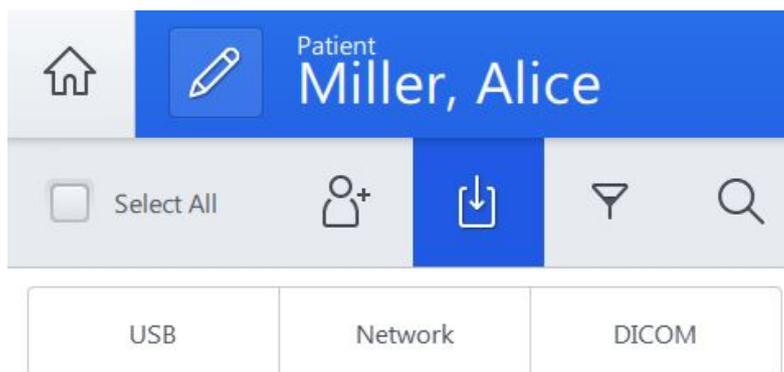
If your USB storage medium does not have sufficient storage space and you start an export, an "insufficient storage space" error message will initially appear during, and not at the beginning of, the export process.

5. Check the available space on your USB storage medium before starting an export.
6. Select the memory option:
 - DICOM format** (for USB and network storage only)
On: Images are stored on a USB medium in DICOM format.
Off: Images are stored in native format (PNG, JPEG) in the predefined patient data structure.
 - Anonymized**
On: No user or patient names are stored in the EXIF image data.
Off: The EXIF image data include surgeon and user names.
7. Tap on the [Start] button to export the patient data.
8. To close the Patient menu: Tap on the "Patient" button or on the  button in the status bar.
9. A successful export is acknowledged by a short status message.

6.4.7 Importing patient data from the USB port or network

Action

1. Tap on the [Patient] button in the status bar.
⇒ The "Patient" menu is displayed.
2. Tap on the [Import]  button.
3. Select the medium from which the patients are to be imported: [USB] or [Network] button.



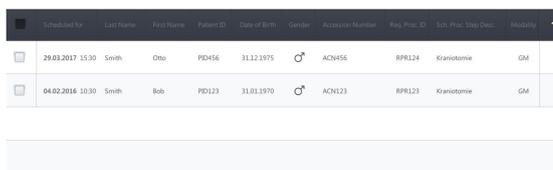
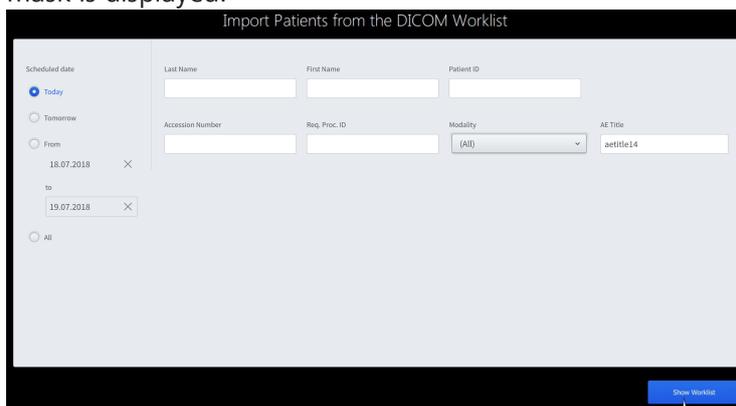
- ⇒ The "Import Patient Data" menu is displayed.
4. Mark the box in front of the name of the patient  whose patient data you want to import.
Mark the [Select All] box if you want to import all of the displayed patients.
 5. Tap on the [Start] button to import the patient data.

- ⇒ A new patient record is always imported, i.e. the data are not added to the existing patient record.
 - ⇒ If a new patient record is imported which has the same name as the existing patient record, there will be two patient records with the same name.
If necessary, change the new patient name (by adding the suffix "_1").
6. To close the "Patient" menu: Tap on the [Patient] button or on the  button in the status bar.

6.4.8 Importing patient data from the DICOM Worklist

Action

1. Tap on the [Patient] button in the status bar.
⇒ The "Patient" menu is displayed.
2. Tap on the [Import]  button.
3. Tap on the [DICOM] button.
⇒ "Importing patient data from the DICOM Worklist" input mask is displayed.



Scheduled by	Last Name	First Name	Patient ID	Date of Birth	Gender	Accession Number	Req. Proc. ID	Modality	Modality
29.03.2017 15:30	Smith	Otto	PID456	31.12.1975	♂	ACN456	BPRL24	Kiariotomie	GM
04.02.2018 10:30	Smith	Bob	PID123	31.01.1970	♂	ACN123	BPRL23	Kiariotomie	GM

4. If you know the patient's required data and would like to import it, enter this data in the input mask.
5. If you do not know the patient's required data, tap on the [Show Worklist] button.
⇒ All patients of the DICOM Worklist are displayed.
6. If you would like to view further details of individual patients, tap on the corresponding arrow key on the right side of the screen.
⇒ A detailed list of the respective patient data then opens.
7. Push this list to the right to return to the DICOM Worklist.

8. Mark the box in front of the name of the patient  whose patient data you want to import.
Mark the box in the header of the DICOM Worklist if you want to import all of the displayed patients.
9. Tap on the [Import selection] button.
 - ⇒ The "Patient" menu is displayed.
 - ⇒ The imported patient(s) are assigned a "D" in the patient list.

 - ⇒ The patient name will now have an information symbol next to it in the status bar.

Tapping this symbol opens a detailed list of patient data.
10. To close the Patient menu: Tap on the "Patient" button or on the  button in the status bar.

6.4.9 Deleting patients

Action

1. Tap on the [Patient] button in the status bar.
 - ⇒ The "Patient" menu is displayed.
2. Tap on the patient to be deleted.
To delete multiple patients simultaneously, mark the boxes in front of the names of all patients to be deleted.
 - ⇒ Selection is confirmed by a  symbol.
3. Tap on the [Delete]  button to delete the selected patient.
 - ⇒ The "Delete Patient Data" menu is displayed.
4. To delete the patient(s):
First place a check mark  next to "Remove patient".
Then tap on the [Yes] button.
 - ⇒ The patient or patients is/are then deleted.
5. To close the "Patient" menu: Tap on the [Patient] button or on the  button in the status bar.

6.5 Recording video files (option)

With the "Video Recording" option, you can record the live image of the integrated video camera during an operation. The recorded video file is respectively assigned to the current patient in the process. A video file can be recorded for up to 24 hours.

You can record video files in two different resolutions:

- HD quality
 - The video files are recorded in high definition
 - The data volume increases in proportion to the length of the video recording
 - Recording video data in HD quality is suitable for short operations
 - Video recordings in HD quality which extend up to 5 minutes into the past can be performed by activating the "SmartRecording" function [► 213]
- LowRes quality (SD)
 - The video files will then be recorded in low resolution. The quality of the recorded video data is therefore lower than for recordings performed in HD quality.
 - The data volume is much lower.
 - Recording video data in low resolution quality is suitable for long operations.

Prerequisite

- The parameters in the "Video Camera" menu have been set
- The parameters of the "Video Recording" menu have been set [► 197]
- The "Video Recording" function has been assigned to a button on the handgrip or the foot control panel
- The internal hard drive has enough free space; the hard drive symbol in the status bar must not be colored orange

Action

1. Start the recording of the video files in high definition (HD) by tapping on the [Video Recording] button  on the screen or by actuating the preconfigured [Video Recording] button on the handgrip or on the foot control panel.
 - ⇒ On the screen, the [Video Recording] button changes from  to  and the time display indicates the runtime of the video recording.
 - ⇒ A blue bar with information on the video recording appears at the bottom of the screen:
On the left side: HD recording; on the right side: storage

location, e.g. internal hard drive with specification of storage capacity in percentage.



- ⇒ The blue bar with information on the video recording turns orange as soon as the free storage capacity of the internal hard drive is only 20%.
- 2. As soon as the blue bar with information on the video recording turns orange, stop the recording of the video files and make sure that there is sufficient storage space on the internal hard drive.
- 3. Stop the recording of the video files in high definition (HD) by tapping on the [Video Recording] button  on the screen or by actuating the preconfigured [Video Recording] button on the handgrip or on the foot control panel.
- 4. To start recording the video files in low resolution (LowRes/SD), open the additional menu "Extended operation" and tap on the [LowRes Recording] button .

- ⇒ On the screen, the [LowRes Recording] button changes from  to  and the time display indicates the runtime of the video recording.
- ⇒ A blue bar with information on the video recording appears at the bottom of the screen:
On the left side: LowRes recording; on the right side: storage location, e.g. internal hard drive with specification of storage capacity in percentage.



- ⇒ The blue bar with information on the video recording turns orange as soon as the free storage capacity of the internal hard drive is only 20%.
- 5. As soon as the blue bar with information on the video recording turns orange, stop the recording of the video files and make sure that there is sufficient storage space on the internal hard drive.
- 6. Stop the recording of the video files in low resolution (LowRes/SD) by tapping on the [LowRes Recording] button  on the screen.

Hint

You can take additional photos or capture images of interesting points while recording HD video files. These photos are assigned a marker in the HD video files (photos are marked in video files only for HD videos and not for LowRes recordings). During the playback

of recorded HD video files, small gray dots are displayed above the "Video playback" slide control at the locations where you have taken a photo.

7. Tap on the [Photo] button  on the screen or actuate the preconfigured [Photo] button on the handgrip or foot control panel.
 - ⇒ An acoustic signal sounds.
 - ⇒ The photo is then saved in the "Patient" menu under the current patient.
 - ⇒ This location is furnished with a marker in the video file and marked by a small gray dot located above the playback bar.
8. Open the recorded video file.
9. Move the "Video playback" slide control to a location which is marked by a small gray dot.



⇒ You now can view the photo.

6.6 Additional recording of video files on a USB storage medium or network drive (parallel recording)

Parallel to recording a video on the internal hard drive of the device, you can record the video files on a connected USB storage medium or network drive.

6.6.1 Parallel recording of video files on a USB storage medium

Note: It is not possible to use USB sticks for parallel recording.

Prerequisite

- The USB storage medium uses at least USB 3.0 (e.g. the USB 3.0 hard drive supplied with the device).

Action

1. Connect a USB storage medium to the device [[▶ 145](#)].
 - ⇒ The USB symbol and the amount of storage space occupied on the USB storage medium appear in the status bar on the upper right edge of the screen.
2. Make sure that enough storage space is available; i.e. the USB symbol must not be colored orange.
3. Tap on  Settings  → Video Recording.
4. Activate the "USB" function in the "Parallel Recording" field.
5. Close the "Settings" menu by tapping on the  button.
6. Start the recording of the video files [[▶ 210](#)].

6.6.2 Parallel recording of video files on a network drive

Prerequisite

- The connection to the network drive (Network Storage) has been established and is stable [▶ 150]

Action

1. Tap on  Settings  → Video Recording.
2. Activate the "Network" function in the "Parallel Recording" field.
3. Close the "Settings" menu by tapping on the  button.
4. Start the recording of the video files [▶ 210].

6.7 Recording video files via SmartRecording

If SmartRecording is activated, video recordings of the live image are taken in HD quality and stored in a buffer for five minutes. After five minutes have expired, the oldest video data in the buffer are cleared in such a way that the last five minutes always remain stored in the buffer. You can go back to the video files stored in the buffer and subsequently record them during an operation.

You can combine SmartRecording with video files in LowRes quality: Leave video recording in LowRes quality activated throughout the entire duration of use of the device. This recording requires much less storage space than a recording in HD quality. To record important surgical situations in HD quality, activate SmartRecording so that you can start the recording extending five minutes into the past for an important surgical situation at any time.

The buffer storage is automatically cleared and restarted if:

- The current user is changed
- The video recording is changed from 2D to 3D or vice versa
- The parallel recording is changed from "USB" to "Network" or vice versa

Activating SmartRecording

Action

1. Tap on  Settings  → Video Recording.
2. Activate the "SmartRecording" slide switch.
 - ⇒ From this point on, the video files will be written to a buffer even if no video recording has been started.
 - ⇒ After five minutes have expired, the oldest video data in the buffer are cleared in such a way that the last five minutes always remain stored in the buffer.
3. Close the "Settings" menu by tapping on the  button.

Prerequisite

Starting SmartRecording

- ☑ No video streaming is running on the device
- ☑ No HD video recording is running on the device
- ☑ The internal hard drive has enough free space; the hard drive symbol in the status bar must not be colored orange

4. Tap on the [Video Recording] button  on the screen or actuate the preconfigured [Video Recording] button on the handgrip or foot control panel.

⇒ The runtime display in the "Video" field does not start at 00:00 as usual, but rather, at the current runtime of the buffer.

⇒ On the screen, the [Video Recording] button changes from  to .

⇒ A blue bar with information on the video recording appears at the bottom of the screen:
On the left side: HD recording; on the right side: storage location, e.g. internal hard drive with specification of storage capacity in percentage.



⇒ The blue bar with information on the video recording turns orange as soon as the free storage capacity of the internal hard drive is only 20%.

5. As soon as the blue bar with information on the video recording turns orange, stop the video recording and make sure that there is sufficient storage space on the internal hard drive.

6. To stop the video recording, tap on the [Video Recording] button  on the screen or actuate the preconfigured [Video Recording] button on the handgrip or foot control panel.

⇒ The video recording ends.

⇒ Recording of the video files to the buffer starts again.

Ending SmartRecording

7. Tap on  Settings  → Video Recording.

8. Deactivate the "SmartRecording" slide switch.

⇒ From this point on, video files will no longer be written to the buffer.

⇒ If you now start recording HD video files, the runtime begins at the moment you start the video recording (at runtime 00:00).

6.8 Streaming video files

The network can live stream video files via the following three network connections:

- LAN
- WLAN
- WLAN hotspot

You can use only one of the three options for streaming at any given time. As soon as the respective network connection has been stably established, the KINEVO 900 sends the streaming signals to a streaming client via one of these three options. The streaming client then forwards the signal to the output device.

The streaming client must support the following protocols and video codecs:

- Protocol: RTSP (RTP via UDP)
- 2D video codec:
 - Encryption: H.264 / MPEG-4 AVC / High Profile / Level 4.2
 - HD resolution: 1920x1080p50/60
 - LowRes resolution: 960x540p25/30
- 3D video codec:
 - Encryption: H.264 / MPEG-4 AVC / High Profile / Level 4.2
 - Resolution: 1920x1080p50/60 TopBottom

If mobile systems are to be used for the display of the video stream, ZEISS recommends using the VLC media player (VideoLAN) for Apple IOS and Windows.

Prerequisite

- The desired network connection (LAN, WLAN, WLAN hotspot) has been set up by the IT admin and is stable
- The streaming client supports the above protocols and video codecs

Action

- Data transmission rate > 40 Mbit/s
1. Tap on  Settings  → Video Recording.
 2. Select the resolution for the video image: "HD Video" or "LowRes Quality".
 3. Activate the slide switch in the "Video Streaming" field.
 - ⇒ As soon as video streaming has been activated, the address of the KINEVO 900 appears in the "Web Address for Video Streaming" field.
 4. Enter this address in the streaming client so that your output device can receive the streaming signal from the KINEVO 900.
 - ⇒ As soon as the connection is stable, video streaming begins.

6.9 Taking photos with the integrated video camera

Photos are snapshots and can be taken in various situations:

- During an operation when no video recording is running
- During an operation when a video recording is running These photos are created as markers in the video files so that they can be located quickly during playback of the recorded video files.
- If, while playing back a recorded video file in the "Patient" menu, you notice an interesting location you would like to look at individually later on

The recorded photos are assigned to the current patient in each case.

Prerequisite

- The "Photo" function has been assigned to a button on the handgrip or the foot control panel

Action

1. Tap on  Settings →  Photo.
2. Select the "Internal Camera" function in the "Recording" field.
3. Select the desired format in the "Storage format (internal camera)" field.
4. Close the "Settings" menu by tapping on the  button.
5. Take a photo by tapping on the [Photo]  button on the screen or actuating the preconfigured [Photo] button on the handgrip or foot control panel.
 - ⇒ A thumbnail of the photo briefly appears at the bottom of the screen.
 - ⇒ An acoustic signal sounds.
 - ⇒ The photo is then saved in the "Patient" menu under the current patient.
6. Tap on the [Photos] button at the bottom of the screen or open the "Patient" menu to view the photos.

6.10 Taking photos with the DSLR camera (option)

You can optionally connect a Canon DSLR camera to the device via a photo adapter and take photos with it. Photos are snapshots and can be taken in various situations:

- During an operation when no video recording is running
- During an operation when a video recording is running

Note:

The photos taken are saved exclusively to the storage medium of the DSLR camera.

Prerequisite

- The microscope is configured as a system for hybrid (optical-digital) visualization.
- The photo adapter, T2 adapter and DSLR camera have been installed at the lateral co-observation port of the surgical microscope
- The DSLR camera and the connection socket for photo release are interconnected via the Canon EOS digital control cable (order no.: 000000-1229-877)
- The "Photo" function has been assigned to a button on the handgrip or the foot control panel

Action

1. Tap on  Settings →  Photo.
2. Select the "External Camera" function in the "Recording" field.
3. Activate the maximum light output of 100% in the "Light intensity for external camera" field.
 - ⇒ The switch illuminates blue .
 - ⇒ The light intensity of the xenon illumination is briefly set to 100% when the external DSLR camera is released.
4. Close the "Settings" menu by tapping on the  button.
5. Take a photo by tapping on the [Photo]  button on the screen or actuating the preconfigured [Photo] button on the handgrip or foot control panel.
 - ⇒ The photo is saved to the external DSLR camera.

6.11 Patient data, photographs and videos

CAUTION!

Do not use images and videos for diagnostic purposes!

The monitors are neither calibrated nor designed for diagnostic purposes.

- ▶ The video contents and images displayed on the monitors (cut sequences) must not be used for diagnostic purposes. They may contain deviations with respect to scale, shape, contrast and color.

6.11.1 Opening the patient directory

Action

1. Tap on the [Patient] button in the status bar.
 - ⇒ The patient directory opens. The data of the current patients are displayed.

6.11.2 Display of media objects (files)

Three views are available for displaying the files in the patient directory. Tapping on one of the symbols changes the number of files displayed.



6.11.3 Viewing patient images

Action

1. Tap on the [Photos] button in the "Patient" menu.
 - ⇒ All photos of the patient are displayed.
If not all of the photos are displayed, scroll down the photo list.
2. Tap on the photo you want to view in full size.
 - ⇒ The photo is displayed in full size.
The following information/buttons are displayed in the footer:
 - ⇒ Opened photo/number of photos
 - ⇒ Date and time of recording
 - ⇒ Located on the left and right edge of the photo are arrows [<], [>] for moving in reverse or forward.
3. Tap on the appropriate arrow [<], [>] to view the previous photo or the next photo or "wipe" horizontally across the touchscreen.
4. Close the menu by tapping on the [Patient] button or on  in the status bar.

Photos with position memory markings  are used to move to saved position memory positions.

6.11.4 Viewing patient videos

Action

1. Tap on the [Videos] button in the "Patient" menu.
 - ⇒ All recorded video files of the patient are displayed.
If not all of the videos are displayed, scroll up the video list.
2. Tap on the [Start] button  to start the playback. Tap on the [Pause] button  to stop the playback.
3. Tap on the [Fast Forward]  or [Fast Rewind]  button to run the video forward or rewind it at fast speed.
4. Tap on the [Photo]  button to capture and save a single image from the sequence. A marker is also set simultaneously to provide you with orientation in the video.
 - ⇒ An acoustic signal sounds.
 - ⇒ The photo is then saved in the "Patient" menu under the current patient.
 - ⇒ This location is furnished with a marker in the video file and marked with a small gray dot located above the playback bar in the video file.
5. To go to the locations where you created photos either while recording or while subsequently viewing the video file, move the "Video playback" slide control to any location where a small gray dot is displayed.



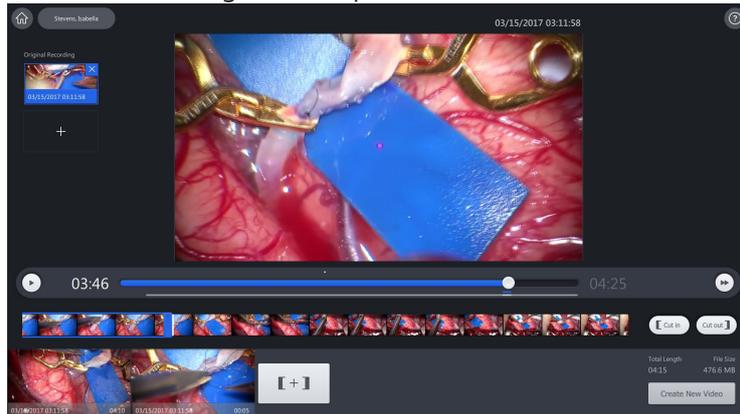
6. Tap on the [Edit video] button  to edit a recorded video [▶ 220].
7. Tap on the [Delete] button  to remove the current video.
8. Tap on the [Export] button  to export the current video.
9. Located on the left and right edge of the video are arrows [, , [, [] for moving in reverse or forward. Tap on the appropriate arrow [, [] to open the previous video or the next video.

6.11.5 Editing patient videos

Videos must not be edited while a recording is in progress. Stop the recording first.

Action

1. Tap on the [Videos] button in the "Patient" menu.
2. Tap on the video to be edited.
 - ⇒ The video view opens.
3. To edit the video, tap on the [Edit video] button .
 - ⇒ The "Video Editing" menu opens.



4. Tap on the [Start]  button to play back the video recording.
5. Tap on the [Fast Forward]  button to run the video recording forward at fast speed. You also can move the slide control underneath the video recording to jump to a specific location.
6. When you have found the part of the video recording you would like to exclude from the summary, tap on the [Pause]  button.
 - ⇒ The current playback position in the video recording is displayed in the timeline selection window as a time marker (small white bar).
7. Drag the blue start bar of the timeline selection window onto the time marker.
8. Tap on the [Cut in] button.
 - ⇒ The video sequence starts at this position.
9. Tap on the [Start]  button to continue the playback of the video recording.
10. Tap on the [Pause] button  if you do not want to play back the entire video recording, but would like to remove the rear portion of the video from the display.
 - ⇒ The current playback position in the video recording is displayed as a time marker (small white bar) in the timeline selection window.
11. Drag the blue end bar of the timeline selection window onto the time marker.

12. Tap on the [Cut out] button.
 - ⇒ The video sequence now ends earlier.
13. You can relocate the start and end points of the video sequence at any time.
14. Tap on the [Temporarily save video sequence] **[+]** button to temporarily save the marked video sequence.
 - ⇒ The cut-out video footage is displayed as a preview at the bottom of the screen.
15. Tap on the [Create New Video] button to save it in the "Patient" menu.
16. To load and edit another video of the patient, tap on the [Add original recording] + button.
 - ⇒ A preview window with all original video recordings of the patient opens.
17. Tap on the video recording you want to edit.
18. Edit the video recording as described.
19. Close the menu by tapping on the [Patient] button or on  in the status bar.

6.12 DICOM (option)

Transfer of patient data

The DICOM option enables a standardized exchange of patient data with the PACS system of the clinic.

Please observe the DICOM Conformance Statement applicable to the KINEVO 900: G-30-1952.

In order to utilize the DICOM functionality, the KINEVO 900 must be registered and configured in the hospital network.

NOTE

Do not use imported images and videos for diagnostic purposes!

Perform diagnosis only at approved diagnostic stations.

Playback images may contain deviations with respect to scale, shape, contrast and color.

- ▶ It is best not to enter patient master data locally in order to avoid mix-ups.
- ▶ Preferably load patient master data from a DICOM Worklist.
- ▶ If data are transmitted by the device into the data network or are kept available in the data network, there is a risk that they will be corrupted or transmitted incompletely. Therefore, no liability can be accepted for the correctness of the data.

6.12.1 Importing patient data from the DICOM Worklist

Action

1. Tap on the [Patient] button in the status bar.
⇒ The "Patient" menu is displayed.
2. Tap on the [Import]  button.
3. Tap on the [DICOM] button.
4. Fill out the offered search criteria.
The search criteria are interpreted as "AND conjunction". Empty search windows are interpreted as "wild cards" (placeholders for other characters).
To limit the search, you can e.g. enter the first letters of the patient's name.
5. Select the scheduled date.
6. Select the [Modality].
7. Tap on the [Display worklist] button.
⇒ The DICOM worklist with the planned patient data records is shown.
8. Accept the patient record by marking the box in front of the patient name  or all records by marking the [planned for]  box.

9. Tap on the [Import Selected] button in order to import the data records.

6.12.2 Exporting patient data to DICOM

Action

1. Tap on the [Patient] button in the status bar.
⇒ The "Patient" menu is displayed.
2. Mark all data to be imported .
3. Tap on the [Export Selected]  button at the bottom right on the touchscreen.
⇒ The "Export Patient Data" menu is displayed.
4. Tap on the [DICOM] selection field in the "Export Path" field.
5. Tap on the [Start] button to export the patient data.
⇒ The message "Export in progress" is displayed.

6.13 Use QEVO Micro-Inspection Tool (option)

The Micro-Inspection Tool QEVO is intended for the inspection of open surgical fields in general surgical interventions and for the visual imaging of ventricles and structures inside the brain during neurological surgical interventions.

When connecting and using the Micro-Inspection Tool, is vital that you observe the relevant warning notices and safety information in the QEVO and QEVO ECU Instructions for Use! [▶ 13]

6.13.1 Switch QEVO on / off

Prerequisite

- KINEVO 900 is switched on and ready for use.
- QEVO is connected to KINEVO 900 . [▶ 168]
- QEVO is activated on KINEVO 900 . [▶ 168]
- A button on the hand grip and/or on the foot control panel of the KINEVO 900 is configured for switching on QEVO . [▶ 180]

Action

- ▶ To switch on QEVO press the [QEVO] button on the hand grip or on the foot control panel.
⇒ Light and camera of the QEVO switch themselves on.
⇒ The camera image of QEVO is shown as a full image. The camera image of KINEVO 900 is displayed on the touchscreen as Picture in Picture.
- ▶ Press the [QEVO] button on the hand grip or on the foot control panel to switch off QEVO.
⇒ Light and camera of the QEVO switch off.
⇒ The camera image of KINEVO 900 is shown.

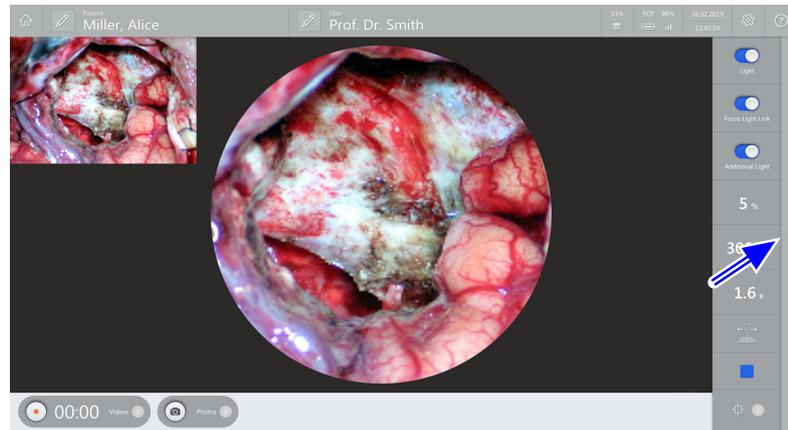
6.13.2 Display QEVO user interface

Prerequisite

QEVO is switched on. [▶ 223]

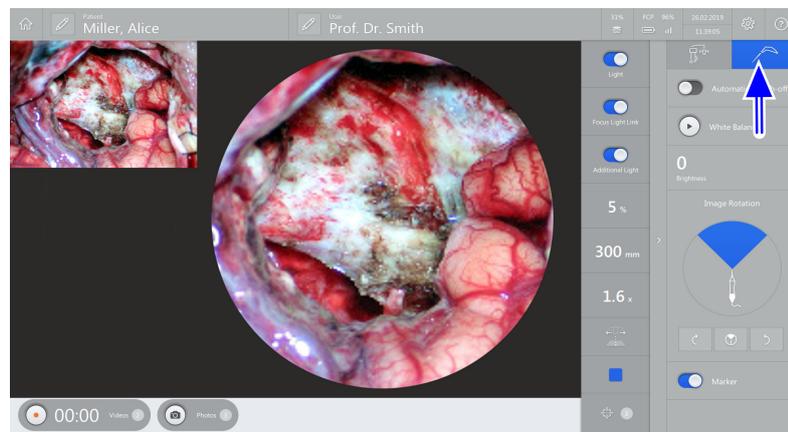
Action

1. Tap on the touchscreen.
 - ⇒ The control elements of the KINEVO 900 software are shown.
2. Tap on the bar on the right-hand edge of the screen.



⇒ Additional menu "Extended operation" opens.

3. Tap on the [QEVO] button in the upper area of the additional menu.



⇒ The "QEVO" menu opens.

6.13.3 Switching the automatic switch-off function on/off

The switch-off function switches QEVO off if the tool is set aside and not moved for 40 seconds. If the automatic switch-off function is not switched on, the light source remains switched on continuously. QEVO must then be switched off by pressing the [QEVO] button on the hand grip or the foot control panel.

Prerequisite

- ☑ The "QEVO" menu [▶ 224] or the "MultiVision" menu [▶ 98] is opened.

Action

- ▶ To switch on the automatic switch-off function, activate the [Automatic Switch-off] button.
 - ⇒ The button will light up in blue .
- ▶ To switch off the automatic switch-off function, deactivate the [Automatic Switch-off] button.
 - ⇒ The button will turn gray .

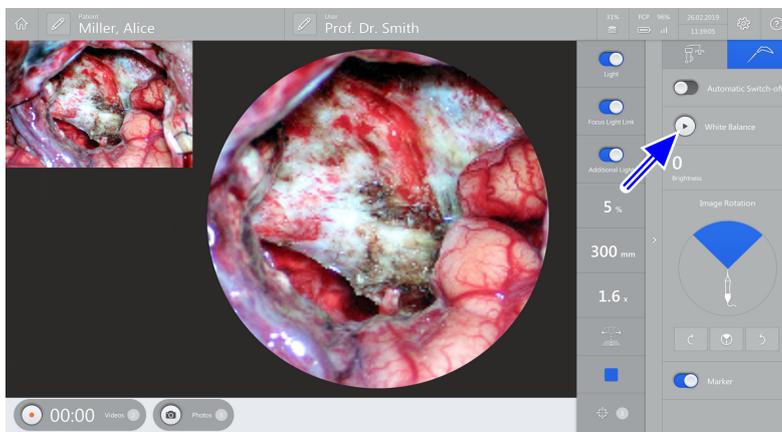
6.13.4 Perform white balance

Prerequisite

- ☑ QEVO is switched on.
- ☑ The "QEVO" menu is opened.
- ☑ A white surface is shown.

Action

1. Hold the shaft tip at a distance of 5 to 30 mm on a white surface.



2. To start the white balance, tap on the [White balance] button .

6.13.5 Setting the image brightness

QEVO regulates the image brightness automatically. If the shaft tip is directed on a light surface, the image brightness is reduced. If the shaft tip is then introduced into the surgical field quickly, it may take 1 or 2 seconds until you see a fully illuminated image.

The image brightness can be set in two different ways.

Setting the image brightness on the hand grip

In the QEVOmode, both yellow buttons of the right hand grip are automatically reserved for controlling the image brightness of the Micro-Inspection Tool.

Prerequisite

- QEVO is switched on.



1	[Increase brightness] button	2	[Reduce brightness] button
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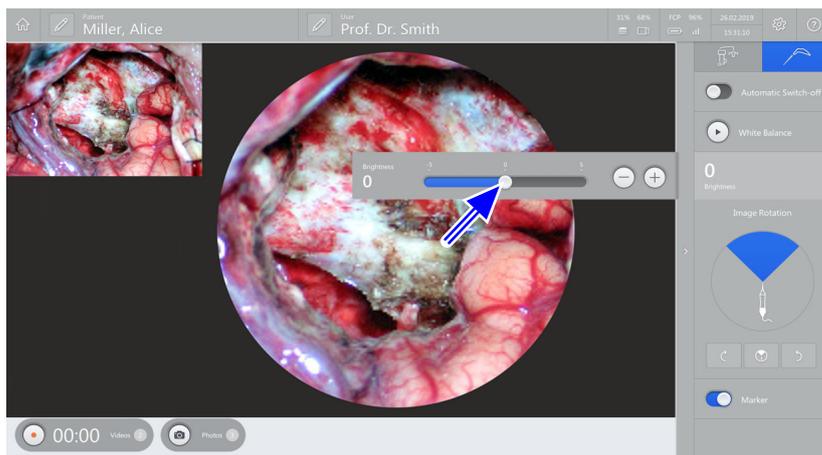
Action

1. To increase the image brightness, press the yellow button on the right-hand side of the right hand grip often enough until the desired image brightness is set or the maximum image brightness is reached.
2. To reduce the image brightness, press the yellow button on the left-hand side of the right hand grip often enough until the desired image brightness is set or the minimum image brightness is reached.

Prerequisite

Setting the image brightness in the "QEVO" menu

- QEVO is switched on.
 - The "QEVO" menu is opened. [▶ 224]
3. In the "QEVO" menu, tap on [Brightness].
 - ⇒ A slide control opens.



4. To increase the image brightness, push the slide control to the right or tap \oplus often enough that the desired image brightness is set or the maximum image brightness is reached.
5. To decrease the image brightness, push the slide control to the left or tap \ominus often enough that the desired image brightness is set or the minimum image brightness is reached.

6.13.6 Change QEVO alignment

Using the "QEVO alignment" function, you can rotate the QEVO camera image on the monitor in order to align the viewing direction of the Micro-Inspection Tool relative to the viewing direction of the surgical microscope.

The alignment can be set in increments of 45°. The blue segment in the "QEVO" menu symbolizes the current alignment of the instrument relative to the viewing direction of the surgical microscope.

The QEVO alignment can be set in two different ways.

Set QEVO alignment on the handgrip

Prerequisite

- QEVO is switched on.



1	XY Joystick
---	-------------

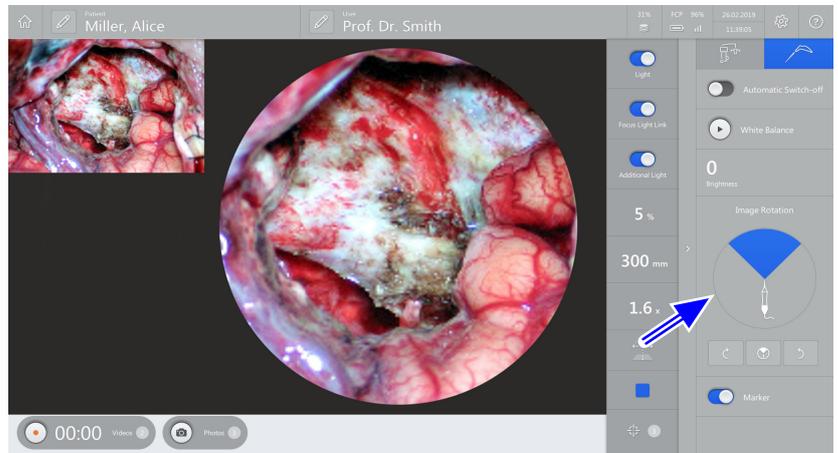
Action

- ▶ In order to align the image in a clockwise direction, press to the right on the XY joystick of the right hand grip often enough until the image corresponds to the alignment of the QEVO.
- ▶ In order to align the image in a counterclockwise direction, press to the left on the XY joystick of the right hand grip often enough until the image corresponds to the alignment of the QEVO.

Set QEVO alignment in the "QEVO" menu

Prerequisite

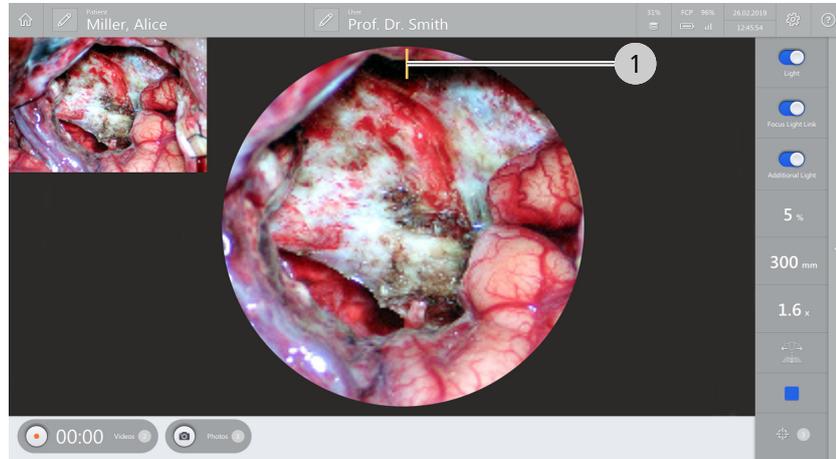
- QEVO is switched on.
- The "QEVO" menu is opened. [▶ 224]



- ▶ In order to align the image in a clockwise direction, tap  often enough until the image corresponds to the QEVO alignment. Alternatively, tap on the corresponding circular area of the section.
- ▶ In order to align the image in a counterclockwise direction, tap  often enough until the image corresponds to the QEVO alignment. Alternatively, tap on the corresponding circular area of the section.
- ▶ To reset the image rotation, tap on . Alternatively, tap on the upper section of the circular area.

6.13.7 Show / hide marker

The marker shows the upper edge of the recorded camera image. The position of the marker changes accordingly with the rotation of the Micro-Inspection Tool around the optical axis.



1	shown marker
---	--------------

Prerequisite

- QEVO is switched on.
- The "QEVO" menu [▶ 224] or the "MultiVision" menu [▶ 98] is opened.

Action

- ▶ In order to show the marker, activate the [Marker] button.
 - ⇒ The button will light up in blue .
- ▶ In order to hide the marker, deactivate the [Marker] button.
 - ⇒ The button will turn gray .

6.13.8 Switchng the light on/off

If needed, you can use QEVO as an additional light source for the surgical field, by switching on the light of the Micro-Inspection Tool without camera. To do this, a button on the hand grips or on the foot control panel must be configured for switching the QEVO light on and off.

Prerequisite

- A button on the hand grip and / or on the foot control panel of the KINEVO 900 is configured for switching on the QEVO light . [▶ 180]

Action

- ▶ To switch QEVO light source on, press the [QEVO light ON/OFF] button on the hand grip or on the foot control panel.
 - ⇒ The QEVO light switches on.
- ▶ To switch off the QEVO light, press the [QEVO light ON/OFF] button on the hand grip or on the foot control panel.
 - ⇒ The light of the QEVO switches off.

6.14 BLUE 400 (option)

NOTE

Application of BLUE 400 only with eyepiece-based optical observation!

Tubes and eyepieces must be used when the BLUE 400 option is applied.

Because of regulatory restrictions regarding the contrast medium used with BLUE 400, the BLUE 400 option is not registered in all countries, and is therefore not available in every country. Please contact your local ZEISS representative to obtain information regarding the registration status of BLUE 400 in your country. In the USA, the BLUE 400 option may not be used for clinical applications, but only for research purposes!

Intended use / Indication for use (US only)

The BLUE 400 option is designed for a surgical microscope and can be used in tumor surgery to visualize marked tumor tissue with fluorescence dyes.

Normal use

The integrated fluorescence module BLUE 400 serves to render fluorescent areas visible. It is designed for excitation in the wavelength range of 400 to 410 nm and observation in the wavelength range of 620 to 710 nm. The surgeon can switch back and forth between white light and blue excitation light for fluorescence at the touch of a button. For optimal viewing of the fluorescent light, the room or the ambient lighting should be dimmed.

Normal use under standard conditions

The BLUE 400 fluorescence option enables the user to visualize fluorescence light and auto fluorescence light from tissue and to display it digitally.

The visualization of the fluorescence signal is influenced by several different factors:

- the fluorescence medium and its concentration in the tissue
- the illumination intensity of the light source in the defined wavelength range
- the transmission of the optical system
- the total magnification and the aperture setting
- the working distance and the illuminated field diameter

When using the KINEVO 900 in conjunction with a fluorescence substance, the medical contraindications apply as in the use of suitable marker substances.

- Only use fluorescent agents approved for the planned application.
- Check whether the fluorescent agent can be excited in the wavelength range from 400 to 410 nm and whether it emits fluorescent light of sufficient intensity in the wavelength range from 620 to 710 nm.
- As in almost all procedures, false-positive and false-negative results can also occur in the fluorescence-based method. Evaluation by the user based on other methods is necessary.

For optimal visualization of the fluorescence signal, the room and surrounding lights should be dimmed.

6.14.1 Configuring BLUE 400

6.14.1.1 Configure fluorescence button on the hand grip or FCP

Action

1. Tap on  Settings →  Operation → Hand grips [▶ 180] or FCP → Configure fluorescence button.
2. Tap on a configurable button.
 - ⇒ The available functions appear in the selection field on the right side.
3. Tap on the "Fluorescence" function in the selection field.
 - ⇒ The function is accepted and displayed next to the button symbol.

6.14.1.2 Configuring the light intensity for BLUE 400

Action

1. Tap on  Settings →  Fluorescence → BLUE 400.
2. Set the desired start value with the [Light Intensity (start value)] slide control in the "BLUE 400" field.
 - ⇒ The illumination lights with this brightness when BLUE 400 is switched on.

In order to achieve a good fluorescence result, ZEISS recommends using the factory setting of 100%.

6.14.1.3 Configuring the video camera for BLUE 400

Action

1. Tap on  Settings →  Video Camera.
2. Scroll down in the Video Camera menu to → BLUE 400.
3. Set the shutter control to "Auto" or "Manual".
4. If you have set the shutter control to "Auto", set the desired brightness level on the [Auto Brightness] controller.
5. If you have set the shutter control to "Manual", set the exposure time in the [Manual Shutter] selection field.
6. Close the "Settings" menu by tapping on the  button.

6.14.2 Carry out BLUE 400 functional inspection

CAUTION!

Risk of infection due to unsterile fluorescence target.

The patient may become infected if an unsterile fluorescence target is used.

- ▶ Therefore, perform the fluorescence function test prior to the operation and without a patient.

CAUTION!

Do not use images and videos for diagnostic purposes!

The monitors are neither calibrated nor designed for diagnostic purposes.

- ▶ The video contents and images displayed on the monitors (cut sequences) must not be used for diagnostic purposes. They may contain deviations with respect to scale, shape, contrast and color.

Prerequisite

- BLUE 400 fluorescence target is available

Action

1. Place the BLUE 400 fluorescence target in the center of the illuminated field.
2. Set the focus to 250 mm.
3. Set the zoom to 3 x.
4. Focus the fluorescence target by moving the surgical microscope up and down.

5. Dim the room lighting.
6. Start the BLUE 400 fluorescence application [▶ 234].
7. Check whether the image on the touchscreen corresponds to the supplied sample image in the target.
NOTE! There may be some slight differences in color and brightness.
8. Stop the BLUE 400 fluorescence application.

6.14.3 Starting the BLUE 400 fluorescence application

As soon as the BLUE 400 fluorescence application is started, the "MultiVision" function is automatically deactivated in order to prevent any impairment of the image quality in the eyepiece and on the video image resulting from the additional data injection.

Prerequisite

- ☑ In the "Fluorescence" menu, BLUE 400 is selected in the "Fluorescence mode" field.

Action

1. To start the BLUE 400 fluorescence application, tap on the handgrip or the FCP button to which you have assigned the "Fluorescence" function.
2. Or, in the main menu bar on the touchscreen, tap on  Fluorescence → Select BLUE 400 → Start the fluorescence application → .



Result

- ✓ The BLUE 400 fluorescence application begins.

6.15 YELLOW 560 (option)

NOTE

Application of YELLOW 560 only with eyepiece-based optical observation!

Tubes and eyepieces must be used when the YELLOW 560 option is applied.

Because of regulatory restrictions regarding the contrast medium used with YELLOW 560, the YELLOW 560 option is not registered in all countries, and is therefore not available in every country. Please contact your local ZEISS representative to obtain information regarding the registration status of YELLOW 560 in your country.

Intended use / Indication for use (US only)

The YELLOW 560 option is an accessory for the intraoperative illumination of the surgical area with light in the wavelength range from 460 nm to 500 nm. Light in the wavelength range between 540 and 690 nm is particularly highlighted.

Normal use

The integrated YELLOW 560 fluorescence module is used to make fluorescing areas visible. It is designed for excitation in the wavelength range of 460 to 500 nm and observation in the wavelength range of 540 to 690 nm. The surgeon can switch back and forth between white light and blue excitation light for fluorescence at the touch of a button. For optimal viewing of the fluorescent light, the room or the ambient lighting should be dimmed.

Normal use under standard conditions

The YELLOW 560 fluorescence option permits the user to visualize and digitally record fluorescent light and autofluorescent light emitted by tissue.

The visualization of the fluorescence signal is influenced by several different factors:

- the fluorescence medium and its concentration in the tissue
- the illumination intensity of the light source in the defined wavelength range
- the transmission of the optical system
- the total magnification and the aperture setting
- the working distance and the illuminated field diameter

When using the KINEVO 900 in conjunction with a fluorescence substance, the medical contraindications apply as in the use of suitable marker substances.

In almost all procedures, even the fluorescence-supported procedures, false-positive and false-negative results can occur.

For optimal visualization of the fluorescence signal, the room and surrounding lights should be dimmed.

6.15.1 Configuring YELLOW 560

6.15.1.1 Configure fluorescence button on the hand grip or FCP

Action

1. Tap on  Settings →  Operation → Hand grips or FCP → Configure fluorescence button.
2. Tap on a configurable button [▶ 180].
 - ⇒ The available functions appear in the selection field on the right side.
3. Tap on the "Fluorescence" function in the selection field.
 - ⇒ The function is accepted and displayed next to the button symbol.

6.15.1.2 Configuring the light intensity for YELLOW 560

In order to achieve a good fluorescence result, ZEISS recommends using the factory setting of 100%.

Action

1. Tap on  Settings →  Fluorescence → YELLOW 560.
2. Set the desired start value with the YELLOW 560 [Light Intensity] controller.
⇒ The surgical field will be illuminated with this light intensity as soon as YELLOW 560 is activated.

* In China the light intensity cannot be set to 100% in the YELLOW 560 fluorescence mode due to national regulations.

6.15.1.3 Configuring Video Recording for YELLOW 560

Action

1. Tap on  Settings →  Video Camera.
2. Scroll down in the "Video Camera" menu to . → YELLOW 560.
3. Set the shutter control to "Auto" or "Manual".
4. If you have set the shutter control to "Auto", set the desired brightness level on the [Auto Brightness] slide control.
5. If you have set the shutter control to "Manual", set the desired exposure time in the [Manual Shutter] selection field.
6. Close the "Settings" menu by tapping on the  button.

6.15.2 Procedure for YELLOW 560 function test

CAUTION!

Risk of infection due to unsterile fluorescence target.

The patient may become infected if an unsterile fluorescence target is used.

- ▶ Therefore, perform the fluorescence function test prior to the operation and without a patient.

CAUTION!

Do not use images and videos for diagnostic purposes!

The monitors are neither calibrated nor designed for diagnostic purposes.

- ▶ The video contents and images displayed on the monitors (cut sequences) must not be used for diagnostic purposes. They may contain deviations with respect to scale, shape, contrast and color.

Prerequisite

- YELLOW 560 fluorescence target is available

Action

1. Place the YELLOW 560 fluorescence target in the center of the illuminated field.
2. Set the focus to 300 mm.
3. Set the zoom to 4.5x.

4. Focus the fluorescence target by moving the surgical microscope up and down.
5. Dim the room lighting.
6. Start the YELLOW 560 fluorescence application [▶ 237].
7. Check whether the image on the touchscreen corresponds to the supplied sample image in the target.
NOTE! There may be some slight differences in color and brightness.
8. Stop the YELLOW 560 fluorescence application.

6.15.3 Starting the YELLOW 560 fluorescence application

As soon as the YELLOW 560 fluorescence application is started, the "MultiVision" function is automatically deactivated in order to prevent any impairment of the image quality in the eyepiece and on the video image resulting from the additional data injection.

Prerequisite

- In the "Fluorescence" menu, YELLOW 560 is selected in the "Fluorescence mode" field.

Action

1. To start the YELLOW 560 fluorescence application, tap on the handgrip or the FCP button to which you have assigned the "Fluorescence" function.
2. Or tap on fluorescence → YELLOW 560 → Starting the fluorescence application →  in the main menu list on the touchscreen.



Result

- ✓ The YELLOW 560 fluorescence application starts.

6.16 Using the device as a hotspot

As soon as the WLAN adapter has been activated, you can use the device as a hotspot.

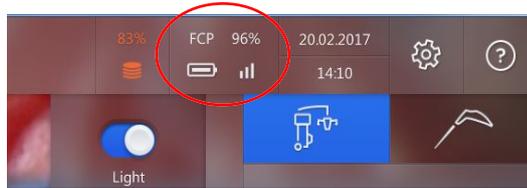
After each reboot of the device, the hotspot must be switched on again by the "Default Users" or "Users" user group. When the device is shut down, the hotspot function also is switched off.

Prerequisite

- WLAN adapter is activated [▶ 148]
- Device was set up and activated as a hotspot [▶ 149] by the "IT Admin" user group

Action

1. Tap on the [Status Information] button in the status bar.



⇒ The "Status Information" menu is displayed.

2. Activate the [Hotspot] slide switch.



Result

- ✓ The device is available as a hotspot.
- ✓ The hotspot corresponds to WPA2/PSK.

* This option is not available in all countries.

6.17 Connecting an external device to the device via web interface (option)

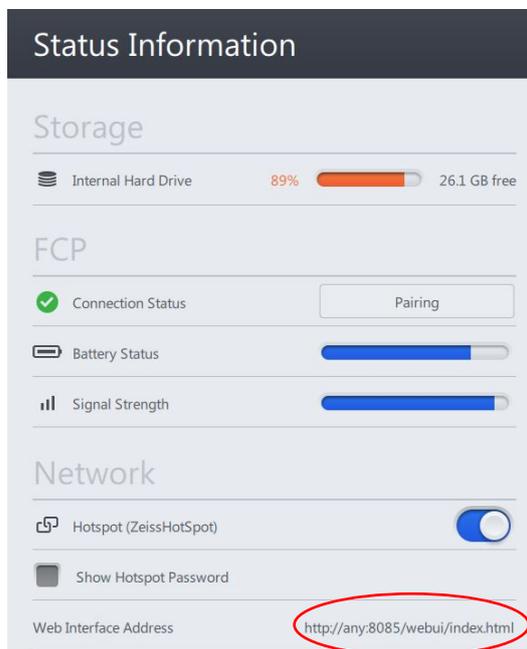
If the web interface is activated in the device, you can access the patient data from an external device.

Prerequisite

- ☑ WLAN adapter is activated* [▶ 148]
- ☑ Device was set up and activated as a hotspot [▶ 149] by the "IT Admin" user group
- ☑ Device is used as a hotspot [▶ 237]
- ☑ Web interface in the device is activated [▶ 150]

Action

1. Tap on the [Status Information] button in the status bar.
 - ⇒ The "Status Information" menu is displayed.
 - ⇒ The address of the web interface is visible.



2. Enter the displayed address of the web interface on the external device.
 - ⇒ An input mask for the web interface password opens on the external device.
3. Enter the web interface password (assigned by the "IT Admin" user group) on the external device.

Result

- ✓ The external device is connected to the device via the web interface; patient data can be accessed.

* This option is not available in all countries.

6.18 Using ZEISS Smart Services

6.18.1 Activating ZEISS Smart Services

Prerequisite

- ☑ You are logged on as Administrator. [▶ 146]

Action

1. Tap on ⚙ Settings → ZEISS Smart Services.
2. Activate the [ZEISS Smart Services] slide switch.
 - ⇒ In the "Extras" [▶ 101] menu, the "Diagnostic Package" and "Remote Service Access" functions become available.

6.18.2 Send Diagnostic Package

Prerequisite

- ☑ The device is connected to the network via LAN or WLAN. [▶ 146]
- ☑ The ZEISS Smart Services have been activated. [▶ 239]

Action

1. Tap on ⚙ Settings → Extras.
2. Tap on the [Send Diagnostic Package] button.
 - ⇒ A data transfer progress bar is displayed on the monitor.

6.18.3 Allow Remote Service Access

 **CAUTION!**

Risk of injury due to accidental device travel movements during remote maintenance!

If ZEISS Smart Services is activated, the device can be controlled and possibly moved via remote maintenance.

- ▶ Make sure that the network connection is stable.
- ▶ Make sure that the device is not standing within reach of a patient.
- ▶ Make sure that the device is not standing inside a sterile surgical area.
- ▶ Do not leave the device unattended when ZEISS Smart Services is activated.
- ▶ Reboot the device before using it for clinical applications.

Prerequisite

- ☑ The device is connected to the network via LAN or WLAN. [▶ 146]
- ☑ The ZEISS Smart Services have been activated. [▶ 239]

Action

1. Tap on ⚙ Settings → Extras.
2. Activate the [Remote Service Access] slide switch.
3. Deactivate the [Remote Service Access] slide switch as soon as the remote service has been completed.

6.19 Powering the device down

Action

1. Press the Standby/ON-OFF switch on the device.
 - ⇒ The device shuts down
 - ⇒ The device is in Standby mode if the Standby/ON-OFF switch illuminates white.
2. Remove the power plug from the power outlet to safely disconnect the device from the power supply.

Empty page, for your notes

7 Cleaning and disinfection

7.1 Safety during cleaning and disinfection

WARNING!

Contamination with pathogenic germs!

If the device is cleaned or disinfected using unsuitable methods or cleaning agents, pathogenic germs can accumulate on the device and the device may also be damaged.

- ▶ Make sure that the device is operated only in a sterile manner and with sterile accessories, Attaching a ZEISS SMARTDRAPE.
- ▶ Make sure that the device is operated, cleaned and disinfected only by personnel who have been instructed in these procedures.
- ▶ When cleaning and disinfecting the device, only use cleaning/ disinfection agents that are suitable and approved for the surface in question.

7.2 Contamination of the system

Dust can penetrate into the internal optics of the device or its individual components.

Action

- ▶ Always close all openings that are not in use with the covers provided (e.g. openings for eyepieces, tube outlets or the lateral co-observation outlets).
- ▶ Always store tubes, eyepieces and accessories in dust-free cases when they are not being used.
- ▶ After use, cover the system with the supplied dust cover to protect it from dust.
- ▶ Clean used accessories directly after use.

7.3 Cleaning and disinfecting agent

7.3.1 Cleaning agents

	Unit	Order number
Optics cleaning kit	1 piece	000000-2096-685
Microfiber cleaning cloth	1 piece	000000-1439-266
Optical lens wipes	Available from specialized dealers	

7.4 Cleaning

Clean the device before the first use and after every use.

7.4.1 Cleaning optical surfaces

The multi-layer T* coating of the optical components (e.g. eyepieces, objective lenses) ensures optimal image quality. Image quality is impaired by even slight contamination of the optics or by a fingerprint. Clean the exterior surfaces of the optical components (eyepieces, objective lenses) only when necessary:

Action

- ▶ Do not use any chemical cleaning agents.
- ▶ Use a clean and grease-free brush to remove dust.

TIP: For the regular cleaning of surgical microscope's objective lenses and eyepieces, we recommend the optics cleaning set and Cleaning agents [▶ 243] available from ZEISS.

7.4.2 Cleaning the monitor (touchscreen)

To prevent damage, ensure that no moisture or cleaning agents get inside the monitor.

NOTE

Incorrect use of glass cleaner!

Damage to the monitor.

- ▶ Never spray glass cleaner directly onto the monitor.

Prerequisite

- Switch off the device.

Action

- ▶ Clean the monitor with a soft, clean microfiber cloth or with moist optical lens wipes.
- ▶ If necessary, moisten the cloth slightly with water or pure glass cleaner.
- ▶ Wipe the monitor with a moist cloth.

7.4.3 Cleaning mechanical surfaces

All mechanical surfaces of the system can be cleaned by wiping them with a damp cloth.

Action

- ▶ Do not use any aggressive or abrasive cleaning agents.
- ▶ Remove any possible residue using a mixture of 50% ethyl alcohol and 50% distilled water plus a dash of household dishwashing liquid.

7.4.4 Fogging of optical surfaces

We recommend using an anti-fogging agent to prevent fogging of optical surfaces. Anti-fogging agents like the ones offered by opticians for applications with eyeglasses are also suitable for optical surfaces from ZEISS.

Action

- ▶ Observe the Instructions for Use pertaining to the anti-fogging agent concerned.

An anti-fogging agent does not ensure fog-free eyepiece optics. It cleans eyepiece optics and protects them against dirt, grease, dust, lint and fingerprints.

7.5 Disinfection

7.5.1 Disinfecting the mechanical surfaces

The maximum application concentrations are:

- For alcohol (tested with isopropyl alcohol): 60%
- For aldehyde (tested with glutaraldehyde): 2%
- For quaternary compounds (tested with DDAC): 0.2%

NOTE

Surface damage caused by wrong disinfectants!

Performing disinfection with the wrong disinfectants may result in damage to the surfaces of the device.

- ▶ Use an aldehyde and/or alcohol-based disinfectant. The addition of quaternary compounds is acceptable.
- ▶ In order to prevent surface tensions, you may use only the disinfecting components specified above.

Action

- ▶ Disinfect all of the required surfaces.

8 Maintenance

8.1 Safety during maintenance

Regularly checking and maintaining the device is necessary to ensure safe and correct operation of the system and a long service life. For example, within the framework of a service and maintenance contract.

Device-specific technical knowledge is required for all maintenance work. It is frequently necessary to open the system for this work. Please contact your local ZEISS Service organization in due time for the performance of these maintenance activities.

You can find the ZEISS contact partner for your country on the Internet at the following website: www.zeiss.com/med

8.2 Maintenance schedule for the operator

8.2.1 User maintenance intervals

Component	Activity or test criterion
Electromagnetic compatibility (EMC)	<ul style="list-style-type: none"> ▶ No regular inspections or maintenance are required in order to maintain electromagnetic compatibility (EMC).
According to country-specific time specifications	
Safety inspection	<ul style="list-style-type: none"> ▶ Checking the device and electrical safety
Prior to each use	
Brakes	<ul style="list-style-type: none"> ▶ Electrical and mechanical function test: <p>Release brakes completely; braking force holds microscope securely in balanced state without any change of position.</p>
Lamps	<ul style="list-style-type: none"> ▶ Check: <ul style="list-style-type: none"> ■ Operating hours within permissible range ■ Replacement lamp available and ready for use <p>We recommend replacing the lamp after: The specified operating hours have been reached (500 hours)</p>

8.3 Maintenance schedule for the authorized service

8.3.1 Service maintenance intervals

Time Interval	Activity or test criterion
Every 12 months:	Basic device functions Specific function checks: Microscope, illumination, stand system, visual inspection of device identification, cleaning and inspection of optics, video functionality
Every 4 years:	Extended device functions Extended function checks: Microscope, illumination, stand system, visual inspection of device identification and device safety, cleaning and inspection of optics, video functionality, equipment-specific functional tests and checks of various options

8.3.2 Performance of safety inspections

The safety inspection (Technical safety test) serves to determine and evaluate product safety. The user of this product is obligated to perform and document safety inspections in compliance with IEC 62353.

CAUTION!

Risk of injury without safety inspection (technical safety test)!

Hazards and product deficiencies will not be detected in time and can have a negative effect on patients, users, or others.

- ▶ Have a safety inspection in compliance with IEC 62353 performed on time and to the prescribed extent. At the same time, be sure to comply with the relevant national regulations.

Prerequisite

- Only the manufacturer or qualified persons may perform the safety inspection.

Action

- ▶ Check to make sure the Instructions for Use are available.
- ▶ Check to make sure all marks and inscriptions on the device are legible.
- ▶ Check the leakage current and the protective ground conductors.
- ▶ Check to make sure the casters and locking devices function properly and are not worn-out.
- ▶ Perform a function check of all switches, buttons, sockets and indicator lamps of the system.

8.4 Remote service

ZEISS Smart Services offers a direct data exchange between the device and ZEISS Service for remote maintenance or troubleshooting.

For information on the activation and use of ZEISS Smart Services, read Using ZEISS Smart Services [► 239].

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